

Application No. 10/607,758
Reply to Office Action mailed May 17, 2005

AMENDMENTS TO THE CLAIMS

Please amend the claims as reflected in the following listing of claims. *This listing of claims will replace all prior versions and listings of claims in the application.*

1. **(Original)** A vertical cavity surface emitting laser (VCSEL) comprising:
a substrate;
a first mirror situated on said substrate;
an active region situated on said first mirror;
a second mirror situated on said active region;
a first contact situated on a first portion of said second mirror;
a thermally conductive layer situated on a second portion of said second mirror;
and wherein said thermally conductive layer is thermally connected to said first contact.
2. **(Original)** The VCSEL of claim 1, further comprising a thermally conductive metal connected to said first contact.
3. **(Original)** The VCSEL of claim 2, wherein said substrate comprises InP.
4. **(Cancelled)**

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5. **(Currently Amended)** The VCSEL of claim [[4]] 11, further comprising a thermally conductive material connected to said thermally conductive cover.
6. **(Original)** The VCSEL of claim 5, wherein said top mirror comprises InP based material.
7. **(Original)** The VCSEL of claim 6, wherein said top mirror is designed for reflecting some radiation having a wavelength be 1200 and 1800 nanometers (nm).
8. **(Original)** The VCSEL of claim 7, wherein said thermally conductive cover comprises a material from a group of GaP, SiN, AlN, BN, SiC, diamond, and the like.
9. **(Original)** The VCSEL of claim 8, wherein said thermally conductive material comprises a material from a group of gold and like materials.
10. **(Cancelled)**

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11. (Currently Amended) ~~The VCSEL of claim 10,~~ A VCSEL comprising:
a top mirror;
a thermally conductive cover on said top mirror;
a heatsink connected to said thermally conductive cover; and
~~further comprising a first contact situated on said top mirror and thermally~~
connected to said thermally conductive cover and said heat sink.

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12. **(Previously Presented)** A VCSEL comprising:
- a substrate;
 - a first mirror situated on said substrate;
 - an active region situated on said first mirror;
 - a second mirror situated on said active region;
 - a contact situated on a first portion of said second mirror;
 - a low thermal conductive covering situated on a second portion of said second mirror; and
 - a thermally conductive material connected to said contact.
13. **(Original)** The VCSEL of claim 12, wherein said substrate comprises InP.
14. **(Original)** The VCSEL of claim 13, wherein said first mirror comprises a material nearly lattice matched with the InP of said substrate.
15. **(Original)** The VCSEL of claim 14, wherein said thermally conductive material is for conducting heat from said second mirror via said contact.
16. **(Original)** The VCSEL of claim 15, wherein said thermally conductive material comprises material from a group of gold and other like materials.

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17. (Original) The VCSEL of claim 16, wherein the VCSEL is for emitting a laser light having a wavelength between 1200 nm and 1800 nm.

18. (Original) The VCSEL of claim 15, wherein said contact comprises a thermally conductive material.

19. (Original) The VCSEL of claim 18, wherein said thermally conductive material is connected to a heat sink.

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20. (Previously Presented) A VCSEL comprising:
- a substrate;
 - a first semiconductor mirror situated on said substrate;
 - an active region situated on said first semiconductor mirror;
 - a second semiconductor mirror situated on said active region;
 - a dielectric mirror situated on said second semiconductor mirror;
 - a first contact situated on said second semiconductor mirror; and
 - a metal interconnect connected to said second contact and in contact with an edge of said dielectric mirror; and
- wherein said dielectric mirror comprises thermally conductive material.

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21. (Withdrawn) A VCSEL comprising:
- a substrate;
 - a first mirror situated on said substrate;
 - an active region situated on said first mirror;
 - a second mirror situated on said active region;
 - and
 - a thermally conductive material in contact with an edge of said second mirror.
22. (Withdrawn) The VCSEL of claim 21, further comprising a thermally conductive layer situated on said second mirror.
23. (Withdrawn) The VCSEL of claim 22, further comprising a thermally conductive material situated on said thermally conductive layer.
24. (Withdrawn) The VCSEL of claim 21, further comprising a contact situated on said second mirror.
25. (Withdrawn) The VCSEL of claim 24, further comprising a thermally conductive layer on said second mirror.

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26. (Withdrawn) The VCSEL claim 25, further comprising a thermally conductive material situated on said second mirror and said contact.

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27. (Currently Amended) A vertical cavity surface emitting laser, comprising:

a substrate;

a first mirror situated on said substrate;

an active region situated on said first mirror;

a second ~~region-mirror~~ mirror situated on said active region;

a contact situated on said second mirror; and

a thermally conductive structure arranged for thermal communication with a portion of at least one of: the first mirror; and, the second mirror.